P.1/26

FACSIMILE COVER SHEET

Bechtel Nevada

P. O. Box 98521 Las Vegas, Nevada 89193-8521 RSL/LAS VEGAS AREA OPERATIONS

Date 4 39 03 Pages, NOT	including cover sheet _25
TO Brad Jackson	FROM Tiffany Emmitt
Location EPA	Location Nellis Facility / RSL
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call me with any qu	extions or concerns
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	Tilland
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FLORIDA PHOSPHATE MINES **AERIAL RADIOLOGICAL SURVEY**

Prepared for

U.S. Environmental Protection Agency Region 4 Waste Management Division Atlanta, GA

Remote Sensing Laboratory-Nellis (RSL-Nellis) Operated by Bechtel Nevada (BN) U.S. Department of Energy (DOE)

This document is provided for program and budget planning purposes. It is subject to U.S. DOE review and concurrence. This document was developed at the request of and is based on requirements supplied by the sponsor.

DISCLAIMER

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe upon privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Required for all intel-related, unclassified projects:

This document was reviewed for classification and deemed unclassified.

Alan J. Will

Manager

Remote Sensing Department

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1.0 INTRODUCTION

The Remote Sensing Laboratory (RSL), operated by Bechtel Nevada (BN) for the NNSA/NSO propose the use of airborne sensors to perform an area wide mapping of the exposure rate and elevated levels of bismuth-214 (²¹⁴Bi) activity within the Bone Valley Formation (a.k.a., Phosphate Belt) in west-central Florida. This area is approximately 40 miles wide by 70 miles long (or approximately 2220 square miles). BN will determine the background radiation levels and the areas exhibiting excess or elevated levels of ²¹⁴Bi activity over the entire proposed survey area using the Aerial Measurement System (AMS) flown in a DOE helicopter. Sophisticated algorithms will be applied to the aerial data to determine the existence and/or extent of the contaminated areas.

All processing documents, file folders, and reports relating to this project will reference the following title: Florida Phosphate Mines Aerial Radiological Survey.

2.0 BACKGROUND

Attachment 1 shows the proposed Bone Valley Formation survey area. The proposed survey area will be mapped using an array of twelve 2"x4"x16" sodium iodide detectors flown beneath a twin-engine Bell 412 helicopter. The data are geo-referenced using a high spatial resolution differential Global Positioning System or "GPS". Energy spectra collected during flight allow the system to distinguish between the radiological contamination and simple changes in background radiation. The spectral information can be used to identify specific radioactive isotopes. All of the information is recorded by the AMS data acquisition system – REDAR 5.

A number of flights will be required. Each flight can potentially cover between 3 square miles (or 1920 acres) at an altitude of 150 feet with a 250-foot line space interval and 32.5 square miles (20,800 acres) at an altitude of 500 feet with a 1000-foot line space interval. The exact number of flights required for completion of the survey will depend on air traffic control situations within the survey area (i.e., airport terminal control areas, patterns and activities), weather, and technical requirements.

3.0 SCOPE OF WORK

The proposed work will consist of the following tasks:

- A. Attend one preliminary organizational meeting in the vicinity of the survey site with the customer to better define the survey objectives and scope of work (presurvey meeting).
- B. Conduct travel for the survey crew from their home base of operations (RSL-Nellis and Andrews Operations facilities) to the survey site.
- C. Interact with the local Air Traffic Control, Federal Aviation Agency, and local airports, as required to obtain the required permissions for the flights. This includes any needed notification procedures or other permits or permissions needed to perform the stated work.

- D. Obtain aerial radiological data of gamma ray emissions in the 2220-square-mile survey area (approximately 40 miles by 70 miles) as shown in Attachment 1. The survey will be flown at an altitude of 500 ft (152 m) above ground along a set of flight lines spaced approximately 1000 ft (305 m) apart.
- E. Re-survey while deployed, with prior customer approval, any detected ²¹⁴Bi anomalous areas (i.e., minimum survey area size of 1-mile by 1-mile [one-square-mile or 640 acres]), not to exceed 0.1% of the original total survey area size, namely 2.2-square-miles (approximately 1410 acres). These contiguous anomaly survey areas will be flown at an altitude of 150 ft (46 m) above ground along a set of flight lines spaced approximately 250 ft (76 m) apart. If the anomalous areas are not contiguous, the total number of acres to be resurveyed will be decreased on a prioritization basis to remain within the prescribed time and budget identified for the work.
- F. Perform a minimum of six ground truth measurements within the survey boundaries using a high-purity germanium detector and a pressurized ion chamber. Specific measurement locations may be limited by safety and security considerations.
- G. Analyze the AMS and ground truth data to determine the extent of man-made surface radioactive contamination and convert to standard measurement units. Algorithms appropriate for the identification of areas exhibiting excess or elevated levels of ²¹⁴Bi activity will be included in the analysis.
- H. Prepare and distribute a set of Geographic Information System (GIS) compatible overlay maps of the aerial inferred exposure rate and of the areas exhibiting excess or elevated levels of ²¹⁴Bi activity. The aerial radiological data will be displayed as a contour map (color-coded contours with designators) superimposed onto either a geo-referenced U.S. Geological Survey (USGS) topographic map and/or a GIS populated place layer map (if available) of the survey area. The aerial data will not be superimposed onto an aerial photograph of the survey area.
- I. Prepare and provide to the customer a CDROM containing:
 - 1. General description of the site, primary customer, and purpose for conducting the aerial survey.
 - 2. General description of the survey plan and the dates of the survey.
 - 3. Description of our organization, the equipment used, and the data analyses performed.
 - 4. Summary of the survey results.
 - 5. Summary of any detected anomalies, which include net gamma energy spectral data plots (aerial radiological data overlay maps).
 - 6. Terrestrial gamma exposure rate and excess bismuth-214 contour GIS-based plots.
 - 7. Comparison of the inferred aerial exposure rates with the corroborative ground base measurements that were collected from nominal background radiation areas residing inside the survey area boundaries.
 - 8. One hardbound paper copy of the text is also provided.

Note: Spectral plots and/or contour maps printed on 30 inch material and included as deliverables will not be reduced and included in the bound paper copy of the CD-ROM version of the report.

SCOPE OPTIONS 3.0a

There are two scope options associated with this proposal. Both options are cost additive to the fixed cost estimate.

OPTION 1: Survey Summary Report (Formal Version)

This option, to provide a survey report that is subjected to a more rigorous review cycle, is cost additive to the Fixed and Field cost estimates. The following text describes the significant differences between the Formal version of the report and the CD-ROM version:

Survey Summary Report (Formal Version) includes everything cited for the Survey Summary Report (CD-ROM version) and the following:

Spectral plots and/or contour maps printed on 30 inch material and included as deliverables are reduced and included in the bound paper copies of the formal version of the report.

Undergoes formal technical editing and typesetting into an approved standard DOE report format

Draft copies of the report are sent and reviewed by both the customer and DOE. Comments, including graphics changes, are incorporated into the final report.

60 copies of the final report are produced in color. 25 hard copies are distributed to the various DOE managers, as well as various DOE resource and public reading centers. The customer (EPA) receives 10 copies and 25 copies are generally retained at RSL for future use and distribution.

Final published reports are available electronically at http://www.doe.gov/bridge; available to the public from U.S. Department of Commerce National Technical Information Service; and to DOE and their contractors at the U.S. DOE Office of Scientific and Technical Information.

OPTION 2: Post Survey Technical Support to EPA

This option is additive to the Fixed Cost estimate and is described as follows: This work involves technical support to the EPA in the form of 2 BN Scientists traveling to the survey area to assist personnel with interpreting the data presented in the survey report. Typically this would include participation in formal meetings to discuss and present the information to the public. This option is priced to include 4 trips for 2 scientists, spending 3 weekdays at destination.

4.0 COSTS

Bechtel Nevada (BN) is an M&O contractor to the National Nuclear Security Administration, Nevada Site Office (NNSA/NSO). This work will be executed as a Work for Others (WFO) effort and will be performed on a full cost recovery basis.

See Attachments 2 (Fixed Costs), 3 (Field Operations), 4 (Option 1), and 5 (Option 2) for the cost breakdown summaries. This proposal presents costs in two primary categories, one for deployment (fixed) costs and one for field costs. There are also two options presented which are additive to the primary costs. Deployment costs include fixed costs to send assets to the field and to return them to home base once the work is complete. Deployment costs are stated as a lump sum. Field costs include costs for the BN team to operate while conducting the work in the survey locale and to analyze the data collected and produce deliverables. Field costs are stated in terms of average cost per field day to facilitate discussions to limit the size of the area to be surveyed. The amount of area that can be surveyed in a given day is dependent on a number of factors. The exact number of flights required for completion of the survey will depend on air traffic control situations within the survey area (i.e., airport terminal control areas, patterns and activities), weather, and technical requirements.

It is important to note that costs stated per day are valid for days the BN team is in the field regardless of the number of flights flown or the amount of data collected. It is conceivable there could be field days when weather either prevents or limits the number of flights and amount of data collected. In such cases the costs are borne by the customer.

NOTE: Total cost for work is derived by adding the Deployment Costs and the product of the Average Cost per Field Day times the number of field days. Options if selected are additive to result of the calculation.

Assumptions for Average Cost per Field Day

- Average Costs per Field Day (ACFD) are additive to the deployment costs.
- The number of acres surveyed on any given field day depends on several variables including weather, equipment status, size and shape of survey targets and air traffic control requirements.
- ACFD includes all costs for the BN team to remain in and operate in the field including labor, aircraft, fuel, housing, per diem and etc.
- ACFD includes contingency in the amount of 10%.

5.0 MILESTONES

- Attend preliminary planning meeting with the customer.
- Deploy equipment and personnel to field to survey site.
- Perform required fieldwork to obtain aerial and ground data.
- Return equipment and personnel to home base.
- Analyze data for both airborne and ground truth measurements.

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Florida Phosphate Mines Aerial Radiological Survey

- Provide customer with hardcopies of the GIS overlay maps of the aerial results.
- (Option 2)Attend first formal meeting with the customer to discuss/interpret the aerial results.
- (Option 2)Attend second formal meeting with the customer to discuss/interpret the aerial results.
- (Option 2)Attend third formal meeting with the customer to discuss/interpret the aerial results.
- (Option 2)Attend fourth formal meeting with the customer to discuss/interpret the aerial results.
- Provide customer with CDROM of the GIS overlay maps.

6.0 DELIVERABLES

BN will provide the following deliverables:

- Provide GIS overlays of the exposure rate and the excess (or elevated) levels of ²¹⁴Bi activity superimposed onto a U.S. Geological Survey topographical Base Map and/or a GIS populated place layer map (if available) of the survey area two maps for each survey site (six copies of each) plus a GIS-compatible electronic copy.
- Provide a CDROM containing the resultant aerial radiological data overlay maps with text explaining how the data was collected and processed.

Progress, status, and budget information will be provided as part of the NNSA/NSO Emergency Management Division (EMD) quarterly reporting system.

7.0 SCHEDULE

This project will begin within 2 months after receipt of funding.

- First Two Months Coordinate access to airspace and visit the proposed survey area site.
- Third-Fourth Months Acquire aerial and ground-truth data within limitations of weather and airspace access control scheduling.
- Fourth-Fifth Months Analyze data and generate GIS-compatible overlay maps
- Sixth to Tenth Months Prepare a CDROM of the aerial radiological survey results; distribute copies for customer review; obtain NNSA/NSO approval to release report for final distribution.

This work schedule is based on receipt of funds at BN on or before May 28, 2003. The schedule is subject to adjustment if funds are not in place prior to the date indicated. All work for others at BN is accomplished on a non-interference basis with the primary NNSA missions for the facility. Project and task schedules may be adjusted as a result.

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Florida Phosphate Mines Aerial Radiological Survey

8.0 RESOURCE REQUIREMENTS

BN will be responsible for providing resources to be applied to the work associated with this project. Manpower, acquisition, and analysis system resources for this project will be provided by BN.

9.0 PROJECT MANAGEMENT

Project manager, David R. Bowman, will be responsible for the work associated with this project. Project reviews with the sponsor will be held when agreed upon milestones are achieved.

10.0 ADMINISTRATION

This project will be conducted by the NNSA's RSL-Nellis and managed by Joseph M. Ginanni, NNSA/NSO EMD.

11.0 FOREIGN TRAVEL REQUIREMENTS

There is no foreign travel associated with this project.

12.0 TRAINING

BN is responsible for providing appropriately trained personnel to assure safe and complete execution of the work specified for this project.

13.0 SECURITY CLASSIFICATION

This project is not classified.

14.0 SPECIAL CONSIDERATIONS

It is NNSA's understanding that the sponsor will make the following statements about this project:

This project does not utilize human or animal subjects as outlined in 10CFR, Part 745.

This agreement is entered into pursuant to the authority of the Economy Act of 1932, as amended (31 USC 1535) and adheres to Federal Acquisition Regulation (FAR) 6.002 and other applicable Federal Laws and regulations. To the best of our knowledge, the work requested will not place the NNSA and its contractor in direct competition with the private sector.

15.0 NATIONAL TECHNICAL MEANS (NTM) REQUIREMENTS

NTM will not be used in this project.

NO.833 P.11/26

Florida Phosphate Mines Aerial Radiological Survey

16.0 POINTS OF CONTACT (POC)

Sponsor:

U.S. Environmental Protection Agency (EPA)

Project Officer:

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E-mail: Jackson.brad@epamail.epa.gov

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POC:

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Las Vegas, NV 89193-8518

BN/RSL-Nellis:

Project Officer:

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Mailing Address:

Bechtel Nevada

P.O. Box 98521, M/S RSL-31 Las Vegas, NV 89193-8521

Financial POC:

Linda K. Jensen, (702) 295-2931

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NO.833 P.12/26

Florida Phosphate Mines Aerial Radiological Survey

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P.O. Box 98521, M/S-CF027 Las Vegas, NV 89193-8521

Project Engineer:

Larry Zajac, (702) 295-8049

Fax: (702) 794-1057

E-mail: Zajacfl@nv.doe.gov

Mailing Address:

Bechtel Nevada

P.O. Box 98521, M/S RSL-11 Las Vegas, NV 89193-8521

Principal Investigator:

David P. Colton, (702) 295-8765

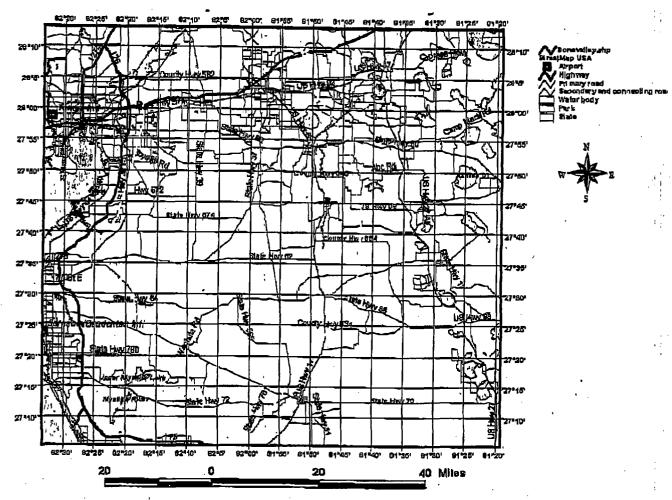
Fax: (702) 794-1660

E-mail: coltondp@nv.doe.gov

Mailing Address:

Bechtel Nevada

P.O, Box 98521, M/S RSL-20 Las Vegas, NV 89193-8521



Attachment 1 Bone Valley Formation Survey Area

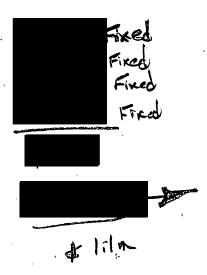
ATTACHMENT 2

COST ESTIMATE

Fixed/Deployment Costs:

Labor
Other Direct Charges
M&S/Subcontract
Service Centers
Contingency
Safeguard & Security Allowance
Federal Administrative Charge
Subtotal





ATTACHMENT 3

COST ESTIMATE

Field Costs/Average Costs per Field Day =

NOTE: Total cost for work is derived by adding the Deployment Costs and the product of the Average Cost per Field Day times the number of field days. Options, if selected, are additive to the result of the calculation.

ATTACHMENT 4

COST ESTIMATE

Option 1 Survey Summary Report (Formal Version):

Labor
M&S/Subcontract
Contingency
Safeguard & Security Allowance
Federal Administrative Charge
Subtotal



ATTACHMENT 5

COST ESTIMATE

Option 2 Post Survey Technical Support to EPA:

Labor Other Direct Charges Contingency Safeguard & Security Allowance Federal Administrative Charge Subtotal



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CONTINGENCY:

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ASSUMPTIONS / EXCLUSIONS:

This is not a stand alone estimate. This estimate works in conjuction with the Florida field One cost estimate.

Bechnal Nevada (BN) is an M&O contractor to the National Nuclear Security Administration, Nevada Site Office (NNSA/NSO). This work will be performed on a full cost recovery basis.

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PURPOSE OF ESTIMATE								,
SCOPE DEFINITION:		:			·	•		•
<i>OUANTITY DEVELOPMENT</i> N/A	(if ap	oplicable)				. •	,	
<u>PROJECT SCHEDULE</u> N/A					·		. "(
<u>CONTRACTING STRATEGY:</u> N/A				(If applicable)				•
CONSTRUCTION WAGE R. N/A	ATES / UNIT]	RATE PER I	HOUR	(If applicable)				
INDIRECT RATES FY03 Rev 0 Rates (09-09-02) w	ere used in this e	estimate.			۵		:	; ; ; ,
		. I		<u> </u>				
ESCALATION: 0% escalation factor was applie	d							
CONTINGENCY: 0% contingency was included in	, 1 this estimate	·						

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CEG NO.:

PROBUBLIANE VADA

DATE: 03/22/03

ASSUMPTIONS / EXCLUSIONS:

Survey Summary Report (Formal Version) OPTION 1

This option to provide a survey report that is subjected to a more rigorous review cycle is cost additive to the Fixed and Field cost estimates. The following text describes the significant differences between the Formal version of the report and the CD-ROM version:

Survey Summary Report (Formal Version) includes everything cited for the Survey Summary Report (CD-ROM version) and the following:

Spectral plots and/or contour maps printed on 30 inch material and included as deliverables are reduced and included in the bound paper copies of the formal version of the report

Undergoes formal technical editing and typesetting into an approved standard DOE report format

Draft copies of the report are sent and reviewed by both the customer and DOE. Comments, including graphics changes, are incorporated into the final report

60 copies of the final report are produced in color. 25 hard copies are distributed to the various DOE managers, as well as various DOE resource and public reading centers. The customer (EPA) receives 10 copies and 25 copies are generally retained at RSL f or future use and distribution

Final published reports are available electronically at http://www.doe.gov/bridge; available to the public from U.S.

Department of Commerce National Technical Information Service; and to DOE and their contractors at the U.S. DOE Office of Scientific and Technical Information.

ADDITIONAL STAFFING REQUIREMENTS: N/A

<u>COST SUMMARY:</u>

PROJECT COST		\$
CONTINGENCY (10%)		
SAFEGUARD & SECURITY ALLOWANCE	4%	
FEDERAL ADMINISTRATIVE CHARGE	3%	
TOTAL ESTIMATED COST		44,814

Project Control Manager (Aproval > 31M)

Date

Date

Program/nishager (Approval <51M, Coneur > \$1M)

Use

Program/nishager (Approval <51M, Coneur > \$1M)

Use

Program/nishager (Approval <51M, Coneur > \$1M)

Deputy GM (Approval > \$1M < \$5M, Concur > \$5M)

General Manager (Approval over \$5M)

Date

CEG NO.:				DATE:	04/22/03
REQUESTOR: NNSA/NSO			PERFORMED BY: NS	R Program	
SUBJECT: Florida Mines Post	Survey Technical Supp	on to EPA Option	2		
AREA: RSL-	Onsite:	Offsite: XXX	ESTIMATE NC CM	1-03-0042 REV. NO.:	0
ESTIMATE CLASS: xx Order of Magnitude (ROM) Preliminary Definitive	ESTIMATE PURPO xx Preliminary/Pl Conceptual/Br Title I Title II	lanning/Study	Work Order Comparative Other	TYPE OF W Non-manu Manual O Manual & Other	al Only
PROJECT WORK SCOPE IS EX	ı		• • • •	•	
Funds Source: NNSA		e Maintenance	Subcontr WFO x	Operating Indirects	er - RSL
Trimmer Design	Life tem	Other D	OB Contractor	Honecos	
ESTIMATE BASIS PURPOSE OF ESTIMATE SCOPE DEFINITION:	•		·		.; .;
<u>QUANTITY DEVELOPMEN</u> N/A	<u>r</u> (if applica	able)			et et
<i>PROJECT SCREDULE</i> N/A <i>CONTRACTING STRATEGY</i>	' :		If applicable)	•	
N/A <u>CONSTRUCTION WAGE R</u> N/A <u>INDIRECT RATES</u> FY03 Rev 0 Rates (09-09-02) v	ATES / UNIT RAT	E PER HOUR (If applicable)		

NO.833

P.25/26

CEG NO.:	BEÖHTEL NAS ADA LEOSTESTAVA TERVIA SELECTO		٠
	A MALEOSTI ESTEVISTIR DATA STEET	DATE:	04/22/03

ESCALATION:

0% escalation factor was applied

CONTINGENCY:

0% contingency was included in this estimate

ASSUMPTIONS / EXCLUSIONS:

This option is additive to the Fixed Cost estimate and is described as follows:

This work involves technical support to the EPA in the form of 2 BN Scientists traveling to the survey area to assist personnel with interpreting the data presented in the survey report. Typically this would include participation in meetings to present the information to the public. This option is priced to include 4 trips for 2 scientists

ADDITIONAL STAFFING REQUIREMENTS: N/A

COST SUMMARY:

PROJECT COST		\$
CONTINGENCY (10%)		
SAFEGUARD & SECURITY ALLOWANCE	4%	
FEDERAL ADMINISTRATIVE CHARGE	3%	
TOTAL ESTIMATED COST		63,457

Rev	ew/Concurrence/Approval:		O Kel 1 - de al	
	Ylord Lora	d 128163	Vica turnion 4/201	
	Project Manager	Date	Program Manager (Approval < \$1M, Concur > \$1M)	Date
	Unnet xux sep att.	e-mail 4174/03		175/03
	Financial Officer (Concurs on Reimb Work F		Deputy GM (Approval > \$1M < \$5M, Concur > \$5M	Mare !
	hill Contine See C	14.e-Mail 4/35/00	NH	<u> </u>
	Project Control Manager (Aproval >\$1M)	Date	General Manager (Approval over \$5M)	Date

FUNDS TRANSMITTAL INSTRUCTIONS

To process this proposal, execute the following steps:

- 1. Review the enclosed documents.
- 2. Initiate a funding document.
- 3. Fax the funding document and scope of work to Joe Ginanni, (702) 295-1062, voice (702) 295-0209.
- 4. Mail the funding document and scope of work to Joe Ginanni, at the following address:

National Nuclear Security Administration Nevada Site Office P.O. Box 98518 Las Vegas, NV 89193-8518

Should you have any questions, please contact Larry Zajac at (702) 295-8049.